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Prevalence of Helicobacter Pylori infection among patients with different gastrointestinal symptoms

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Abstract

Infection with Helicobacter pylori is a frequent medical condition in Egypt that manifests itself in various gastrointestinal ways. Determining the prevalence of Helicobacter pylori infection in patients presenting with various gastrointestinal symptoms is the purpose of this investigation. Fifty patients with different gastrointestinal presentations were selected from Internal Medicine Department Outpatient Clinic, Badr University Hospital to be included in the study. Patients were included if they were 18 years old, both gender and those who are naïve to treatment. Patients with previous history of experience for treatment of Helicobacter pylori infection were excluded from the study. Patient's files were revised to get basic demographic, clinical and biochemical data. Patients were interviewed and interrogated about current and past history and were examined thoroughly. All patients were asked to provide a stool sample from the preceding 24 hours. The rapid stool antigen test was performed according to the manufacturer's recommendations to check presence of helicobacter pylori infection in those patients. 29 patients (58%) were positive H. pylori Ag in stool and 21 patients (42%) were negative H. pylori. There is no statistically significant association for H. pylori Ag in stool regarding demographic data, risk factors and co-morbid diseases. There was a higher frequency of nausea in patients with positive H. pylori Ag in stool (20.7%), while there is no nausea in those with negative H. pylori Ag in stool (p-value =0.026). The frequency of nausea is higher in individuals with positive Helicobacter pylori Ag in their stool, and the prevalence of helicobacter pylori infection is relatively high among patients with various gastrointestinal manifestations.

Keywords: Helicobacter pylori antigen, Gastrointestinal presentations.

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1. Introduction

H. pylori, also known as Helicobacter pylori, is typically acquired in childhood. In adulthood, stomach adenocarcinoma and mucosa-associated lymphoid tissue lymphoma may result from its long-term persistence. Because H. pylori is responsible for 8 out of 10 stomach malignancies in adults, it is one of the most significant infectious causes of cancer globally [1]. A number of factors have been identified as contributing to the variations in prevalence of H. pylori infection. These include advanced age, poor hygiene, a large number of family members, having a mother, a sibling or siblings with H. pylori infection, sharing a room or bed, drinking untreated or unboiled water, and having a low socioeconomic status [2]. Infection with H pylori has decreased in recent years. Still, a significant portion of the world's population—nearly 50%has contracted it. [3]. So, this study is conducted to assess the prevalence of H. pylori infection in patients with different gastrointestinal symptoms.

2. Subject, Material and Methods

We carried out this study in the period from April 2023 to June 2023 in Internal Medicine Department Outpatient Clinic and Clinical Pathology Lab, Badr University Hospital, Faculty of Medicine, Helwan University, Egypt. Fifty patients with different gastrointestinal presentations with age ≥ 18 years and of both sexes were included in the study. We excluded patients with previous history of treatment for Helicobacter pylori infections. We performed full history taking and thorough clinical examination. We revised the initial data of the patients including age, sex, associated co-morbidities and risk factors. Specific investigation includes detection of H. pylori Ag in stool by H. pylori rapid chromatographic stool Ag test which is an immune-chromatographic assay with 97% specificity and 91.3% sensitivity [4]. Before analysis, a stool sample from the previous 24 hours was requested from each patient and was promptly preserved at -20°C. To prevent freezing and thawing frequently, samples were liquated before freezing. The rapid stool antigen test was performed according to the

manufacturer's recommendations without knowledge of the *H. pylori* status. After incubating at room temperature for 20 minutes, the test will be read. A single line is regarded as negative, while the presence of two lines is positive.

2.1. Statistical analysis

The statistical software for social sciences, version 23.0 (SPSS Inc., Chicago, Illinois, USA), was used to analyses the recorded data. The ranges and mean ± standard deviation were displayed for the quantitative data. Additionally, percentages and numbers were used to represent qualitative characteristics. T1. When the predicted count in any cell is less than 5, use Fisher's exact test and Chi-square test rather than Chi-square test. The allowable margin of error was set at 5%, while the confidence interval was set at 95%. A P-value of less than 0.05 proved to be significant. A P-value of less than 0.001 was regarded as very significant.

3. Results

According to Table 1 & Figure 1, 29 patients (58%) were positive H. pylori Ag in stool and 21 patients (42%) were negative H. pylori. There is no statistically significant association form H. pylori Ag in stool regarding demographic data, risk factors nor co-morbid diseases. There was a higher frequency of nausea in patients with positive H. pylori (20.7%), while there is no nausea in those with negative H. pylori (p-value =0.026). According to Table 2, Figure 2 & 3, there is no statistically significant association between H. pylori Ag in stool and demographic data regarding age and sex, with p-value (p=0.970 and p=0.390), respectively. According to Table 3, there is no statistically significant association between H. pylori Ag in stool and smoking with p-value = 0.192. According to Table 4 & Figure 4, there was a higher frequency of nausea in patients with positive H. pylori (20.7%), while there is no nausea in those with negative H. pylori, with p-value (p=0.026); while there is no statistically significant association for H. pylori Ag in stool and Epigastric pain, Heart burn, Abdominal distention, Regurgitation, Vomiting, Constipation, Melena and Anemia, with p-value (p>0.05). According to Table 5 & Figure 5, there is no statistically significant association between H. pylori Ag in stool and co-morbid diseases, regarding Hypertension, Diabetes, Hypotension, Bronchial Asthma and Cardiac diseases, with p-value (P=0.754, P=0.815, P=0.754, P=0.235 and P=0.390), respectively.

4. Discussion

Chronic active gastritis and peptic ulcers can be caused by the prevalent H. Pylori infection. Additionally, gastric adenocarcinoma and gastric mucous-associated lymphoid tissue (MALT) lymphoma have been associated to H. pylori so this study was conducted to assess the prevalence of H. pylori infection in patients with different gastrointestinal symptoms. In this study, 29 patients (58%) were positive for H. pylori Ag in stool and 21 patients (42.0%) were negative. This is agreed with previous results of study conducted in China by Park et al. (2021), while in the Turkish study conducted by Yilmaz et al. (2002), the prevalence was relatively high (64.4%) [3,5]. Age and H. pylori Ag in stool are not statistically significantly correlate (p-value = 0.970). Our study revealed no statistically significant association between H. pylori Ag in stool and sex, with p=0.390. This is in line with the findings of Hasosah et al. (2015) & Sonnenberg (2007) [6,7].

No statistically significant association between H. pylori Ag in stool and Smoking with p-value P=0.192 among the studied patients. This is consistent with Ogihara et al. (2000) and this finding are different from Ferro et al. (2019) [8,9]. There was a higher frequency of nausea in positive H. pylori patients (20.7%), while there is no nausea in negative H. pylori patients (p-value 0.026). On the other hand there is no statistically significant association between H. pylori Ag in stool and other gastrointestinal presentations like Epigastric pain, heart burn, abdominal distention, regurgitation, vomiting, constipation, melena and anemia (p-value >0.05). This is different from other studies as Chan et al. (2002) and Yang et al. (2005) who revealed that epigastric pain is the main presentation in patients with positive H. pylori infection [10,11]. There is no statistically significant association between H. pylori Ag in stool and co-morbid diseases like Hypertension, Diabetes, Hypertension, Asthma and Cardiac diseases, with p-value (P=0.754, P=0.815, P=0.754, P=0.235 and P=0.390), respectively.

5. Limitations

A notable limitation of the investigation was the small number of the patients participated; thus, additional investigations including a larger patient population are necessary to validate the findings of this study.

Table 1: Prevalence of H-pylori Ag in stool among the study group.

H. pylori Ag in stool	No.	%
Positive	29	58%
Negative	21	42%
Total	50	100%

Table 2: Association between H. pylori Ag in stool and Demographic data.

Demographic data	H. pylori Ag in stool				Test value	P-value
	Positive		Negative			
	No.	%	No.	%		
Age Group						
18 to 25 years	7	24.1%	4	19.0%		
>25 to 35 years	6	20.7%	6	28.6%		
>35 to 45 years	8	27.6%	6	28.6%	0.538	0.970
>45 to 55 years	5	17.2%	3	14.3%		
>55 to 65 years	3	10.3%	2	9.5%		
Sex						
Female	20	69.0%	12	57.1%	0.739	0.390
Male	9	31.0%	9	42.9%		

Using: x^2: Chi-square test for Number (%) or Fisher's exact test, when appropriate P-value >0.05 is insignificant.

Table 3: Association between H. pylori Ag in stool and smoking.

Risk factors	H. pylori Ag in stool				Test value	P-value
	Positive		Negative			
	No.	%	No.	%		
Smoker	2	6.9%	4	19.0%	1.703	0.192

Using: x^2: Chi-square test for Number (%) or Fisher's exact test, when appropriate P-value >0.05 is insignificant.

Table 4: Association between H. pylori Ag in stool and gastrointestinal presentations.

Gastrointestinal presentations	H. pylori Ag in stool				Test value	P-value
	Positive		Negative			
	No.	%	No.	%		
Epigastric pain	17	58.6%	13	61.9%	0.055	0.815
Heart burn	4	13.8%	3	14.3%	0.002	0.960
Abdominal distention	11	37.9%	6	28.6%	0.475	0.490
Regurgitation	1	3.4%	3	14.3%	1.944	0.163
Vomiting	4	13.8%	6	28.6%	1.663	0.197
Nausea	6	20.7%	0	0.0%	4.937	0.026*
Constipation	0	0.0%	1	4.8%	1.409	0.235
Melena	1	3.4%	1	4.8%	0.055	0.815
Anemia	1	3.4%	0	0.0%	0.739	0.390

Using: x^2: Chi-square test for Number (%) or Fisher's exact test, when appropriate P-value >0.05 is insignificant; *p-value <0.05 is significant; **p-value <0.001 is highly significant.

Table 5: Association between H. pylori Ag in stool and Co-morbid diseases.

Co-morbid diseases	H. pylori Ag in stool				Test value	P-value
	Positive		Negative			
	No.	%	No.	%		
Hypertension	2	6.9%	1	4.8%	0.098	0.754
Diabetes	1	3.4%	1	4.8%	0.055	0.815
Hypotension	2	6.9%	1	4.8%	0.098	0.754
Bronchial Asthma	0	0.0%	1	4.8%	1.409	0.235
Cardiac disease	1	3.4%	0	0.0%	0.739	0.390

Using: x^2: Chi-square test for Number (%) or Fisher's exact test, when appropriate P-value >0.05 is insignificant.

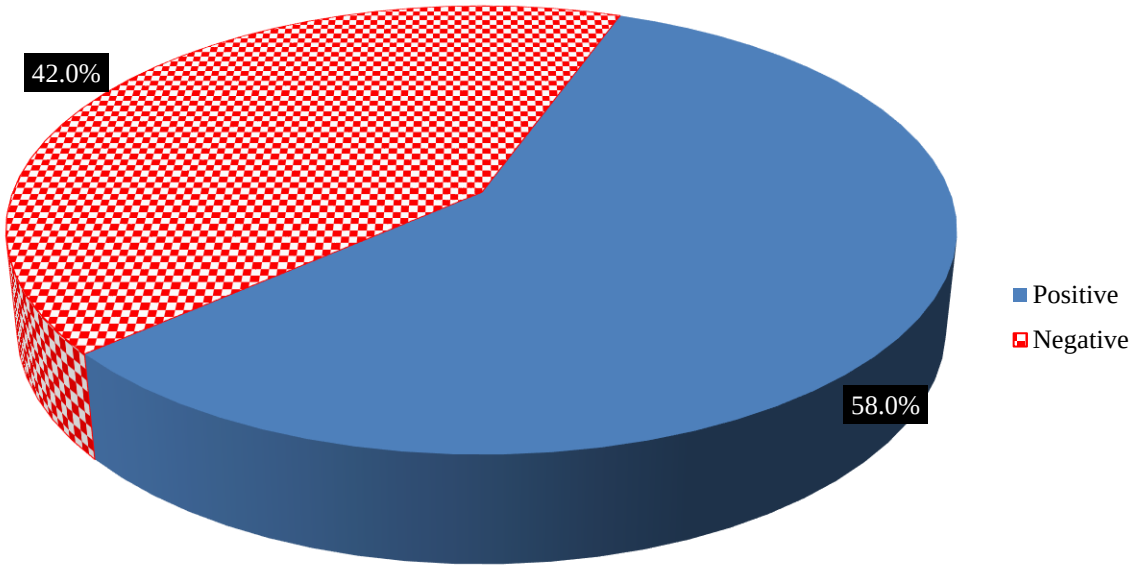

Figure 1: Pie chart H. pylori Ag in stool among the study group.

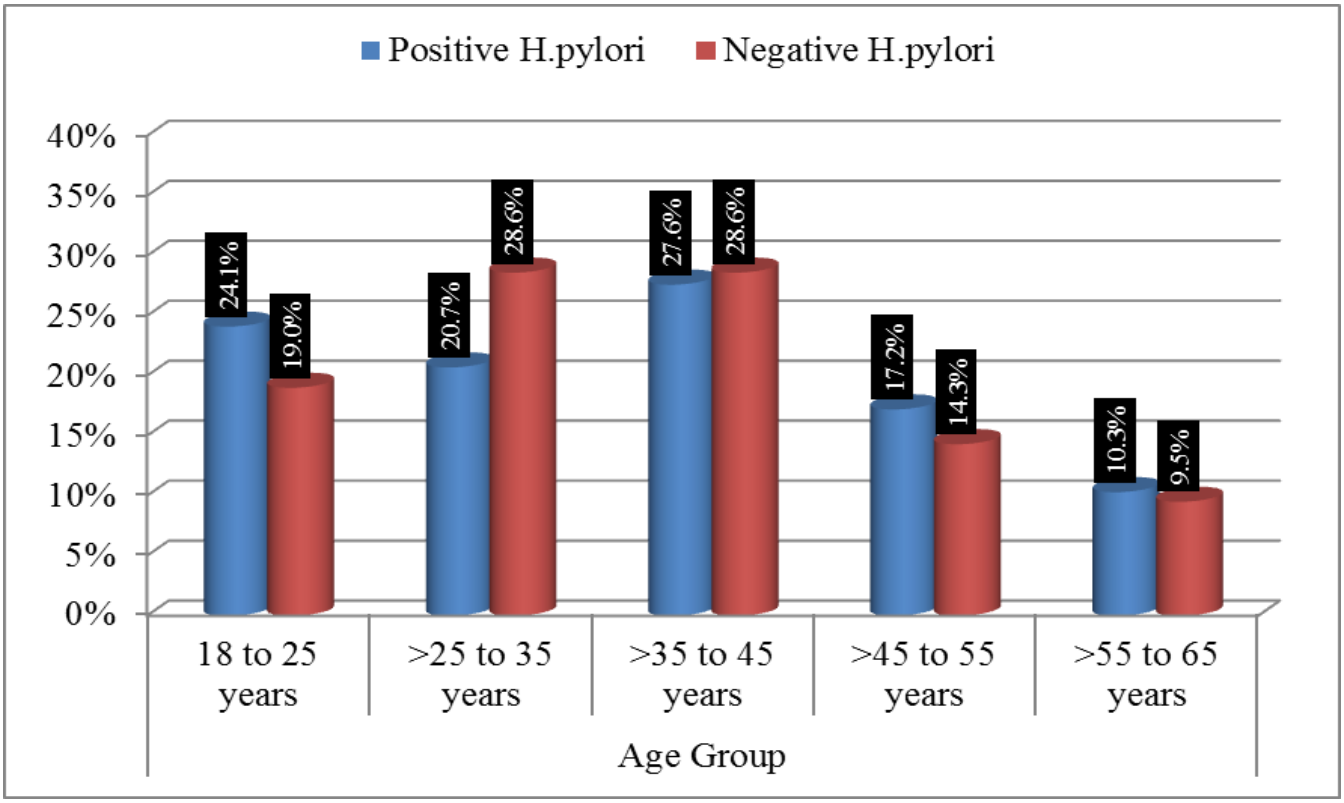

Figure 2: Association between H. pylori Ag in stool and Age Group.

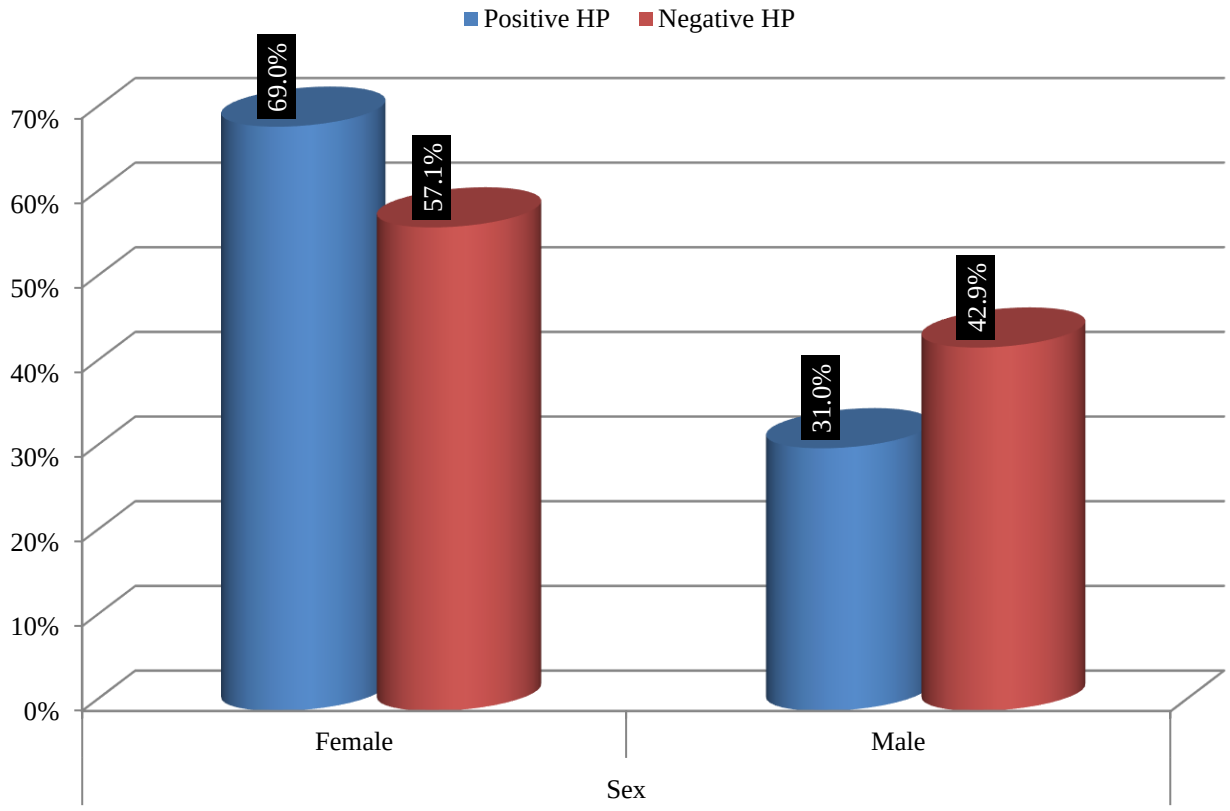

Figure 3: Association between H. pylori Ag in stool and Sex.

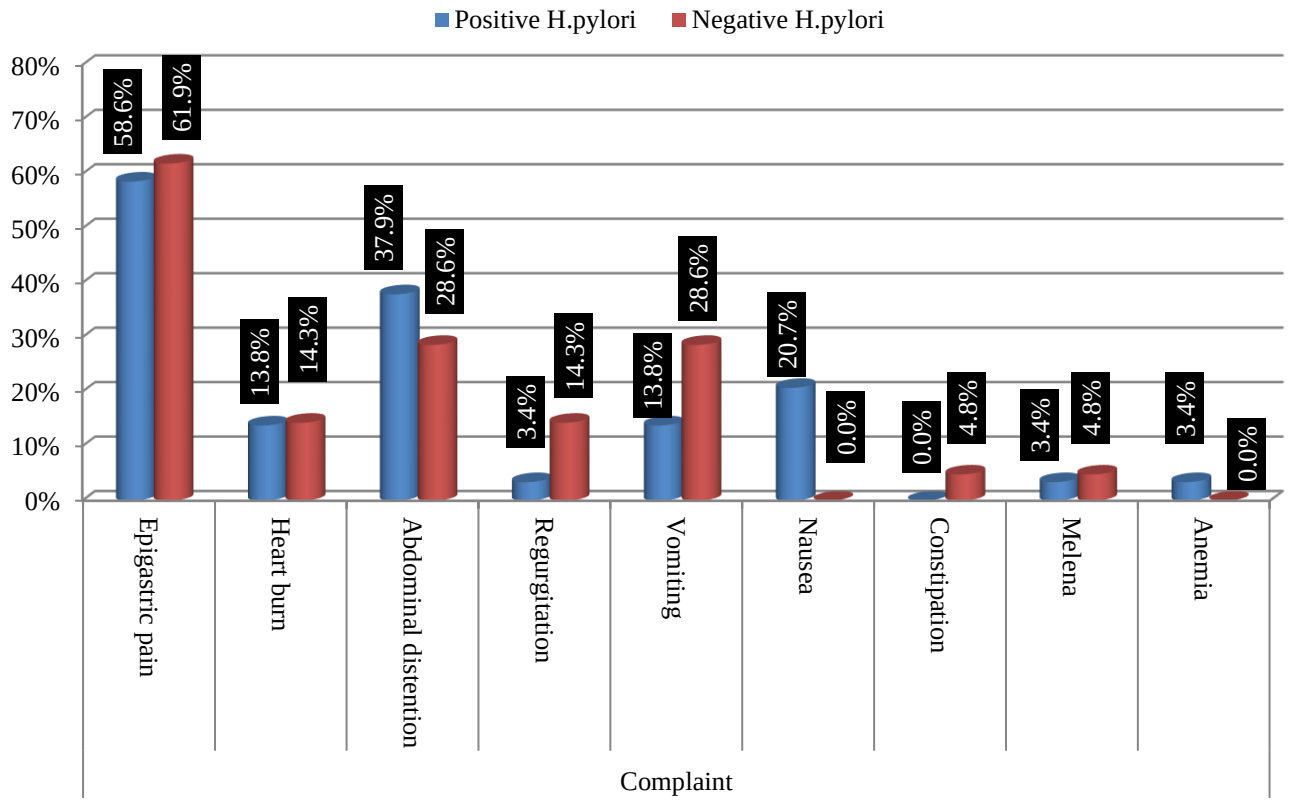

Figure 4: Association between H. pylori Ag in stool and gastrointestinal presentations.

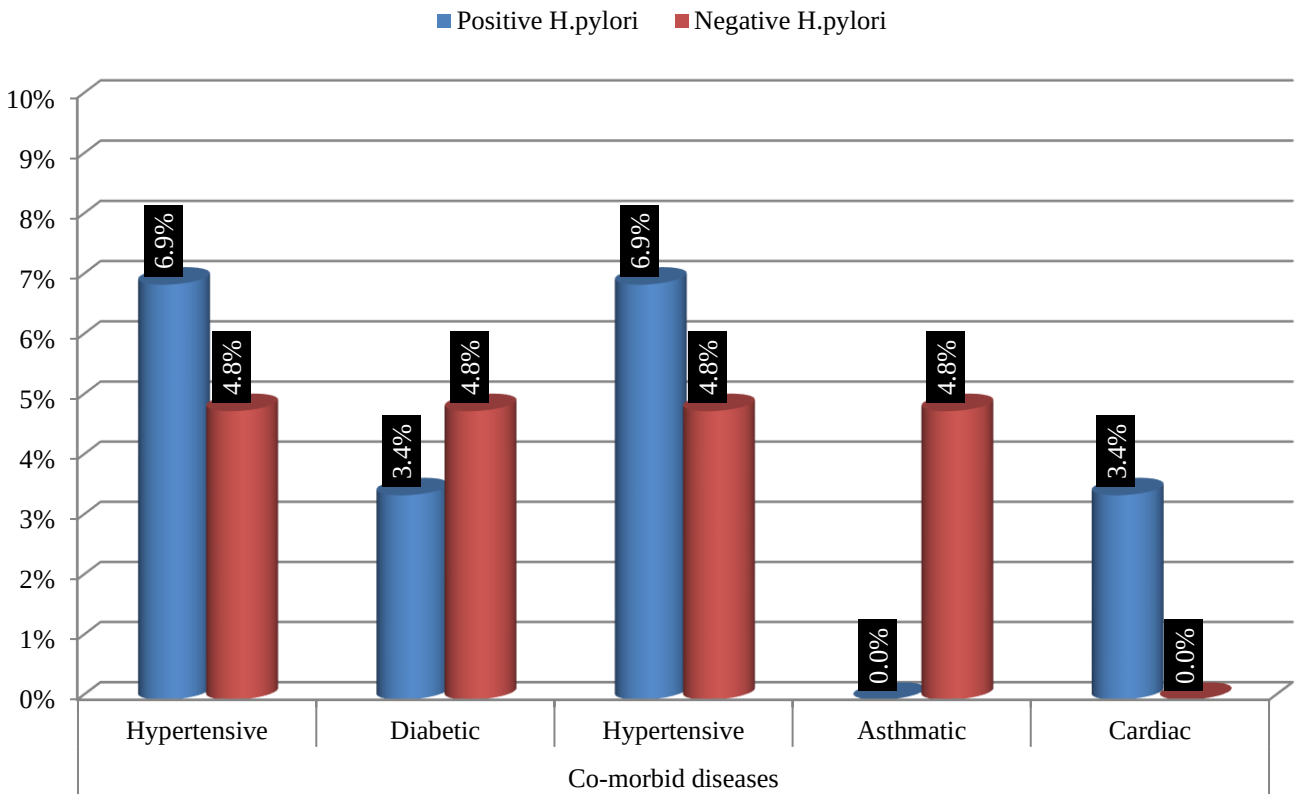

Figure 5: Association between H. pylori Ag in stool and Co-morbid diseases.

6. Conclusions

Among patients with various gastrointestinal manifestations, the prevalence of Helicobacter pylori infection is relatively high. Patients who have positive Helicobacter pylori Ag in their stool are more likely to suffer from nausea.

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Authors' contribution
Study concept and design: AM Performance of the practical work: DE. Interpretation of data: AM and DE. Drafting the manuscript: AM and DE.

Conflict of Interests
None.

Ethical Approval
Approval from the Research Ethics Committee were obtained (IRB#128-2022 R).

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Informed Consent
Written Informed consent from patients.

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